

LAL and HSLipase Are Different Enzymes

- Different cell compartments
 - LAL in lysosomes
 - HSLipase in cytoplasm
- Different amino acid sequences
- Different genes
- Different post-translational modifications
- Different developmental/tissue expression
- Different functions in cell

Amino Acid Alignment (hLAL and h-HSL)

hLAL 83	K M	F L G L V	C L	W P	- - -	L H E S	- - -	20
h-HSL 83	D L	T M T Q S	V T	E D	- - -	F S Q P	- - -	30
	M		R			N I A F	S G G E T A	
hLAL 83	- - -	- - -	- - -	- - -	- - -	- - -	- - -	40
h-HSL 83	- - -	- - -	- - -	- - -	- - -	- - -	- - -	50
	Q R L S G V F A G V R E Q A L G L E P A L G R L L G V A . L							60
hLAL 83	T A	N M	S E I	S Y W	F P S E E Y	E T E		70
h-HSL 83	F D	P A	Y R S	V H T	R C C L A H	H K S	L	80
			D P E T	N				
hLAL 83	D	C L N	I P H G	K N	S D K G	- - -	- - -	90
h-HSL 83	R	S N R	S I F F	T S	N L A E	- - -	- - -	100
	G Y . .	R	R	H	L E A Y L A A L T			110
hLAL 83	- - -	- - -	- - -	- - -	- - -	- - -	- - -	120
h-HSL 83	- - -	- - -	- - -	- - -	- - -	- - -	- - -	130
	Q L R A L V Y Y A Q R L L V I		P	N	L Q - - H	L		140
					F E	E T		150
					P G V . F	G D G L		
hLAL 83	S S N W V T N	A N	- - -	- - -	S S	I L A D	F D	160
h-HSL 83	F L R E Y V T	H K	- - -	- - -	R C	Q F T P	R P	170
	A D	L	G C F Y G	L G F	A			180

190 210
hLAL 99 VWMGN R - - - - - N T S K H K T S Q D - -
h-HSL 99 FLQTI I - - - - - E H K K N E T G A A S - -
S GLVSGFG R L S V S L

220 240
hLAL 99 -
h-HSL 99 -
FTSGRFAIDPELRGAEEFERITQNLDVHFWK

250 270
hLAL 99 E -
h-HSL 99 A -
FWNITEMEVLSSLANMASATVRSRLLSL

280 300
hLAL 99 - - - - - S Y D E M K Y D P N F I N - - - -
h-HSL 99 - - - - - E M P L T D P T T S P P A - - - -
P P E A F A L I L T G P G P

310 330
hLAL 99 -
h-HSL 99 -
VLVRLISYDLREGQDSE . . . S . G Q R .

340 360
hLAL 99 T I I A F S E L A K R K M F P S V A
h-HSL 99 L E P R P Q R S R S L I F F Q T S
Q . P . . G V A

HLAL 03 370 F C T S 380 M K L R
h-HSL 03 R S H E P Y L K S W A Q E L G A P I S I D Y S L P E P

HLAL 03 420 L D H I K D L 430 D K E F P Q S F K W L T
h-HSL 03 F R A E E C F Y C W A K H C L G S T E
P L F A L G . . C

HLAL 03 420 K E C 440 G N L C F T V A L R A A Y G V R V P D G
h-HSL 03 - - D S G T H . .

HLAL 03 460 I M A A Y P A T M L Q P A A S P S R L L S L
h-HSL 03 L C G F N E R N M D P L L P L S

HLAL 03 480 N M S R D T - - - - T P A G T S Q N L H W
h-HSL 03 L S K C S A Y G A K T E H S D N S D Q K L G M G L
V . Y G A K T E H S M

HLAL 03 520 S Q A V K F Q K F Q A D W S - - - - -
h-HSL 03 V R R D T A L L R D F G S S W L N S F L E L S G R K

h1A1 33 550 570
h-H2L 33
- - - - - A K N Y F H Y N S Y P P
- - - - - S E A A L A Q P Q G P L G T

h1A1 33 580 600
h-H2L 33
Y N D M L P T V W S G H W L A V - - - - -
D S N L T R D S L R N S T S S T P E M S L S A

h1A1 33 610 630
h-H2L 33
- - - - - Y I T - - - - -
- - - - - S F P - - - - -
E T L S P S T P D V N L L P E D A G E E A E A K N E L

h1A1 33 640 660
h-H2L 33
- - Q I T N F E S I W E L D - - - - -
- - M D R G V A A F G F P R - - - - -
S P L . . P E H R S S Q G A T Q M P

h1A1 33 670 690
h-H2L 33
- - - - - I W G D W R L Y N - - - - -
- - - - - M S P L A P D S M L K S L P P V H I

h1A1 33 700 720
h-H2L 33
- - - - - K I N M Y Q L R - - - - -
- - - - - D S M A L R N L G Q P V T L R V

730

740

750

hLAL 33

h-H31 33

VEDLPHGFLLTAAALCRERTRQAAELCVERIR

760

770

780